Developing Answerable Clinical Questions & Searching the Medical Literature

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care management | institute

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Overview

- Importance of the right Clinical Question
- Framing the Clinical Question
  - PICO Format
  - Use of an IT platform
- Inclusion/Exclusion criteria
- Literature search
- Article review
  - Use of an IT platform
- Benefits

The importance of asking the right question

- “If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it.”

  Albert Einstein

- To ensure your initiative is aligned with your strategy you need to be rigorous in defining the problem you are trying to solve and why those issues are important.

“ASK” – Focus Question

- Critical Step, Why?
  - Development of a clearly defined question is what creates the backdrop and ultimately sets the pace for the EBM process
  - Developing an answerable clinical question is what forms the framework of which the evidence will be acquired
- What occurs without optimal energy and time?
  - No longer effective or efficient (waste resources)
  - Produce wrong or irrelevant outcomes
  - Develop recommendations that are not aligned with initiative’s strategies

Framing The Clinical Question

- Converting the information needs into a clinical question
  - Involves collaboration from all interested in the question and answer(s)
  - Iterative process
  - Ultimately, a well defined and structured question facilitates efficient searching in the literature search and the likelihood of finding meaningful results

PICO Format (Explicit, Focused Clinical Question)

PICO	Definition/Description
P	Patient, Population or Problem
I	Intervention, Prognostic Factor or Exposure
C	Comparison or Intervention (If appropriate)
O	Outcome (Critical & Important)
What type of question are you asking?	Diagnosis, Etiology, Therapy, Prognosis, Prevention, Harm
Type of study you want to find?	What would be the best study design/methodology

Example: General Clinical Question

What medications should be given to patients with heart failure?

- Vague and general clinical question
  - Difficult to construct PICO elements and conduct literature search from this question
  - Need a more defined and focused question
  - Factors to consider to make this a specific clinical question
    - What is the population of interest? (e.g. adults, certain age groups, does the population of interest have additional comorbidities)
    - What are the interventions of interest?
    - Are we comparing these interventions with other treatment modalities?
    - What outcomes are important to consider and/or look for in the literature?

Example: Explicit, Specific Clinical Question

Clinical Question: Should beta-blockers be used, in addition to standard treatment, for patients with LVSD?

P	Adults with LVSD on standard therapy for heart failure and without contraindications to beta-blockers
I	Beta-blocker therapy
C	Placebo
O	Mortality due to cardiac causes; All-cause mortality; Hospitalization
What type of question are you asking?	Treatment
Type of study you want to find?	Meta-analyses, Randomized Controlled Trials

Using an IT platform to define PICO

Portal and Database Protocol

1. What is/are the framed questions you would like to answer?

Note: As an adjunct to search and to help identify relevant articles, please provide Doctor Evidence with a list of references of clinical studies that should be reviewed during the database creation process.

Sample Framed Question

"What is the evidence regarding a sirolimus eluting stent compared with paclitaxel eluting stents or with bare metal stents in people with acute ST elevation myocardial infarction?"

2. What is the PICO, where P = patient population, I = intervention, C = comparison group, O = outcomes? *Note whether outcomes are "and/or".*

P =	
I =	
C =	
O =	

Using an IT platform to define PICO

Turning data into knowledge

3. **Should studies that have mixed populations of the characteristics chosen be included (i.e.: 80% diabetic, 20% not diabetic)? Or, should only studies with pure population characteristics (i.e., 100% diabetic)?** Please note that full text will likely be required to definitively answer this question.

☐ Yes, include mixed populations
☐ No, do not include mixed populations

***If yes*, is there a specific cut-off for inclusion (i.e.: only include studies that have at least 80% obese patients).**

☐ Yes—Minimum percent for inclusion: ☐
☐ No

4. **Should all study designs be included or only specific study designs?**

☐ All study designs
☐ Specific study designs (choose from below)

2 (or more) group studies (aka: comparison studies):
☐ RCT
☐ Prospective non-randomized controlled trial
☐ Retrospective non-randomized controlled trial

For comparison studies (per above), please select one or more categories below:
☐ Placebo
☐ Head to head – different drugs, devices or procedures
☐ Head to head – same drug, different dose
☐ Head to head – same drug, different dose schedule
☐ Head to head – same drug, different formulation
☐ Head to head – same drug, different route of administration
☐ Head to head – other (please specify_____)

Using an IT platform to define PICO

5. **Is the length of study follow-up important?**
   Please note that full text will likely be required to definitively answer this question.

   ☐ Yes—Minimum follow-up time: ____
   ☐ No

6. **Are there a minimum number of participants that should be included in each study?**
   Please note that full text will likely be required to definitively answer this question.

   ☐ Yes—Minimum number of participants: ____
   ☐ No

7. **Are there any limits on nationality or language of studies?**
   Please note that pilot projects will include English studies only.

   ☐ English only, American only
   ☐ English only, any country
   ☐ Any language, any country

8. **Identify date ranges for search, i.e., how far back should Doctor Evidence search for relevant articles? For example, no date limit or limit to articles published in the last ten years.**

   ☐ No date limit
   ☐ Yes—Limit to articles published within last number of years (specify): ____

Using an IT platform to define inclusion/exclusion criteria

- First specify criteria in standardized PICO form
  - Study design, length of follow-up, language
- Remaining inclusion/exclusion not in standardized PICO form
  - Assessed during article review

Clinical Question:	In patients with unrepaired abdominal aortic aneurysm (AAA) what is the effectiveness of pharmacologic therapy, including angiotensin-converting enzyme (ACE) inhibitors, beta-blockers and statins, to reduce the risk of cardiovascular disease progression? What are the harms associated with treatment?
Population:	Inclusion: Unrepaired AAA >3 cm. Exclusion criteria (including but not limited to): 1. History of AAA repair 2. Other indications for these drugs including but not limited • Established CAD (MI; Prior bypass/angioplasty; angina; any known ischemic CAD, e.g. positive treadmill test) (statins, beta-blockers, ACEI) • History of stroke/TIA (statins, ACEI) • Non-coronary atherosclerosis (statins, ACEI, beta-blockers) • Hypertension (ACEI, beta-blockers), • Dyslipidemia warranting treatment (statins) • Heart Failure (ACEI, beta-blockers) • Other conditions where statins, beta-blockers, or ACEI may be indicated

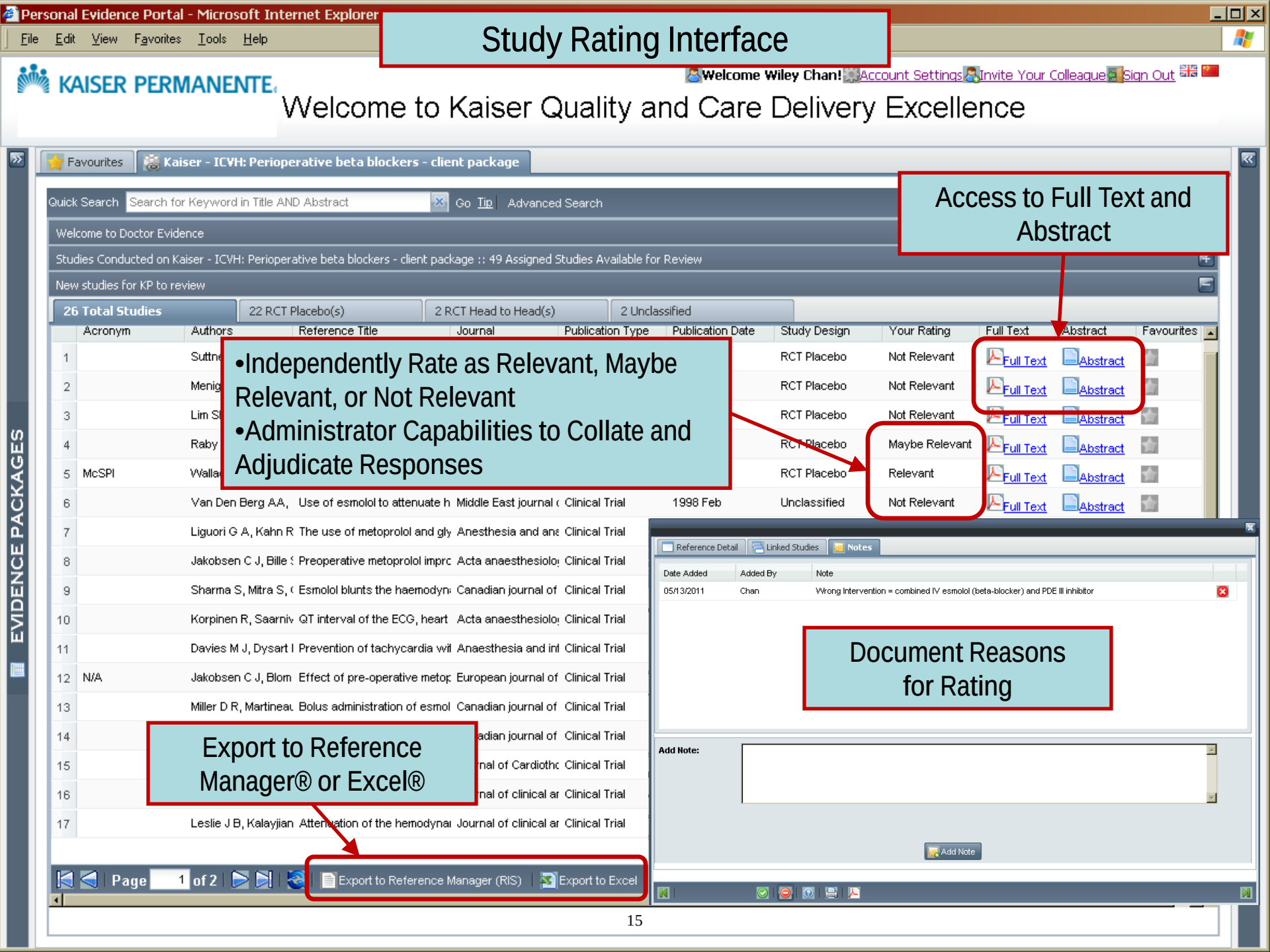
Conduct Literature Search

- Translate clinical question into defined search strategy
- Use terms related to the health condition of interest (population), terms related to the intervention(s), and terms specifying the type(s) of study design
  - Use of both brand and “generic” names
- Use of Boolean operators
- All searches conducted using Medline (PubMed), CENTRAL (Cochrane Central Register of Controlled Trials), and the Cochrane Library of Systematic Reviews
  - Other databases/search engines used as needed
- Articles identified are loaded into IT platform

Example Search

Search Name	Search String	Number of hits
	Limits: 6/1/2009 to Present, English, Humans, Abstracts, Meta - Analysis, RCT, Systematic Review	
Disease search	(acute coronary syndrome [tw]) OR (angina pectoris [tw]) OR (angina, stable [tw]) OR (angina, unstable [tw]) OR (angina pectoris, variant [tw]) OR (microvascular angina [tw]) OR (coronary disease [tw]) OR (coronary artery disease [tw]) OR (coronary occlusion [tw]) OR (coronary stenosis [tw]) OR (coronary restenosis [tw]) OR (coronary-Subclavian Steal Syndrome [tw]) OR (coronary thrombosis [tw]) OR (myocardial infarction [tw]) OR (Anterior Wall Myocardial Infarction [tw]) OR (interior Wall Myocardial Infarction [tw]) OR (myocardial stunning [tw]) OR (shock, cardiogenic [tw]) OR (myocardial ischemia [tw]) OR myocardial ischemia OR myocardial ischemia [mesh]	3930
Anticoagulant search (including specific drug names)	Anticoagulants OR warfarin OR coumadin [tw] OR dabigatran OR pradaxa OR rivaroxaban OR xarelto [tw] OR apixaban OR eliquis	1300
Antiplatelet Search (including specific drug names)	Platelet Aggregation Inhibitors OR Aspirin OR Clopidogrel OR plavix [tw] OR Prasugrel OR effient [tw] OR Ticagrelor OR Brilinta [tw] OR Ticlopidine OR ticlid [tw] OR Cilostazol OR pletal [tw] OR Dipyridamole OR persantine [tw] OR Elinogrel	1578
Stent Search	Stent	1163
Combination Searches	#2 AND #3	274
Combination Searches	#2 AND #4	645
Combination Searches	#2 AND #5	691
Combination Searches	#2 AND (#3 AND #4)	166
Combination Searches	(#2 AND #5) AND (#3 AND #4)	42
Combination Searches	(#2 AND #5) AND (#3 OR #4)	954
Deduplicated References	Total Number of Hits	1384

Study Rating Interface



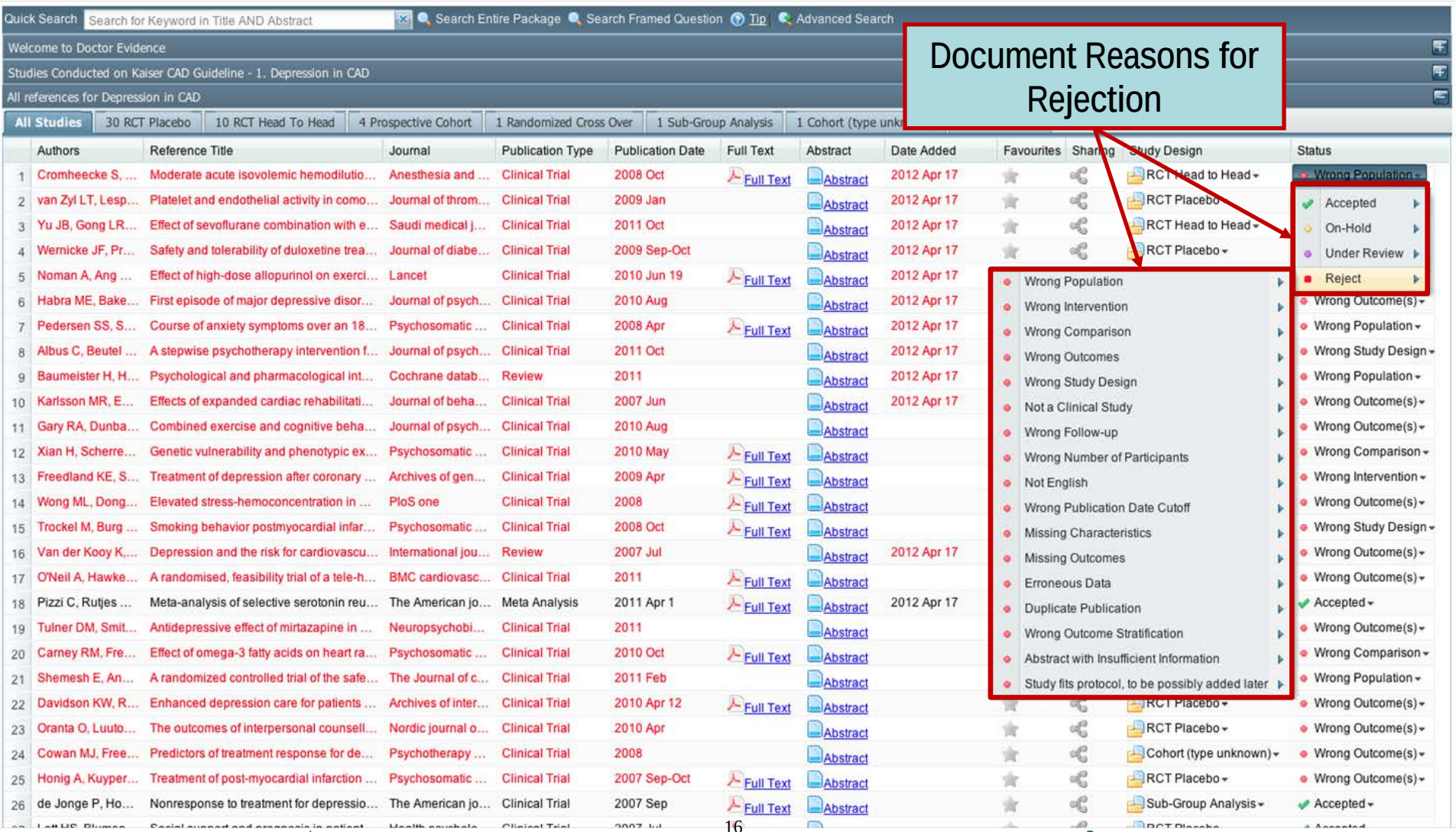
Access to Full Text and Abstract

- Independently Rate as Relevant, Maybe Relevant, or Not Relevant
- Administrator Capabilities to Collate and Adjudicate Responses

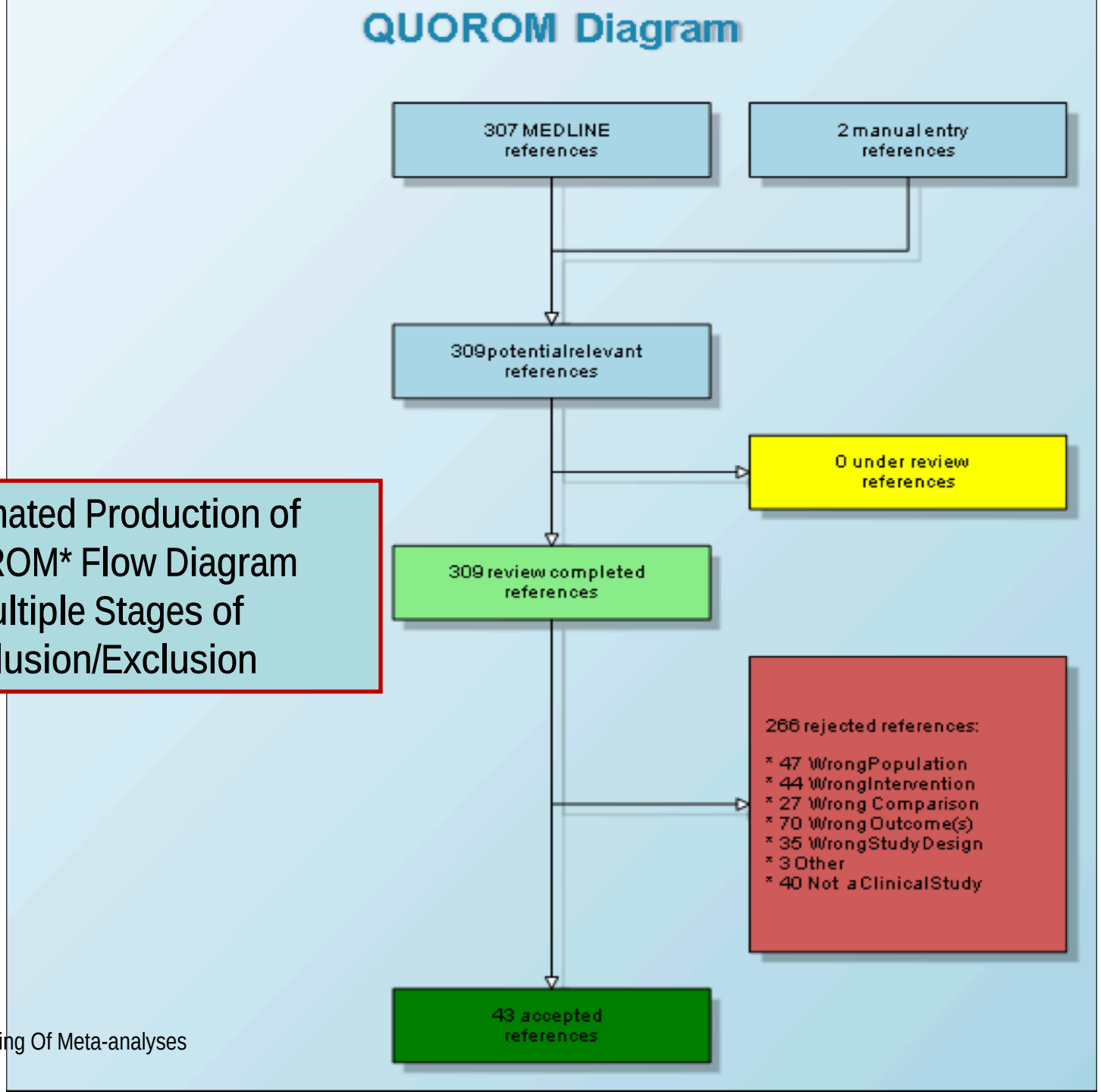
Document Reasons for Rating

Export to Reference Manager® or Excel®

Study Selection/Rejection Interface After Adjudicating Ratings



Automated Production of QUOROM* Flow Diagram Multiple Stages of Inclusion/Exclusion



*Quality Of Reporting Of Meta-analyses
Lancet 1999

Overview of benefits of IT platform for literature review

- Increased efficiency
- Ability to track and document reasons for rejection, etc
  - Track those that still need to be reviewed
- Ability to have dual review
  - Discrepancies can be adjudicated using IT platform and marked as accepted or rejected
- More transparency in our decisions
  - Can include notes detailing why we rejected an article, important article information, etc
- New articles are identified and added using a dynamic process
- Articles can be monitored over time and housed in one database for each clinical question
- More rigorous and allows us to better answer clinical questions